and the inevitable mixing up of old collections and names, the present volume which for the first time untangles all these threads, makes it possible to know what grows in the Bahamas. To the tourist and traveller the book is invaluable, and it deserves the wide usefulness it will undoubtedly enjoy.—Norman Taylor.

Small's Origin and Development of the Compositae*

This interesting comparative study was continued through ten years. The main conclusion is that the basal form of the great Composite family is the genus *Senecio*, and that this in turn has been derived from the *Lobelioideae*. The aim has been to present a coherent account of the family considered as a whole. The fourteen chapters, each followed by a bibliography, are: (1) History of the Classification of Compositae, (2) The Pollen-Presentation Mechanism, (3) Its Irritability, (4) Corolla, (5) Pappus, (6) Involucre, (7) Receptacle, (8) Phyllotaxis, (9) Fruit Dispersal, (10) Geographical Distribution, (11) Origin, (12) Miscellaneous, (13) General Conclusion, (14) Story of the Compositae in Time and Space.

The accompanying diagram is an abbreviated form of that given under "Phyletic conclusions." While the usual tribes are kept up reasons are given for separating *Gnaphalium* and related genera from the *Inula* group, now classed together as *Inuleae*. The naturalness of the *Helenieae* is also questioned. The interpretation of pappus as a divided calyx is shown to be misleading; it can only be explained as a trichome structure. Throughout the work geographic distribution is considered in connection with morphology.

"With a little mental effort and a little study of Bergson the student may be able to perceive plants of the Andean *Lobelioideae*, such as *Siphocampylos-Centropogon*, change into *Senecio*." The views of Bergson are thus interpreted: the smooth-flowing stretches of a river correspond to orthogenetic development; the waterfalls are saltations which give rise to the branches or back waters; the river-bed with its sinuosities is the environment. "In evolution by orthogenetic saltation, with epharmosis and

* Small, James. The Origin and Development of the Compositae. 334 pp., 40 figures and maps. New Phytologist Reprint No. 11. London, 1919.

elimination of the unfit exercising a directing and delimiting function on the actual forms assumed by organized life, we have the best of Darwinism, neo-Lamarckism, neo-vitalism, Mendelism and the mutation theory."

The Compositae appear to have been formed with and for the mountains. The facts may be explained on the theory that a yellow *Lobelioid*, starting as an arborescent scrambler

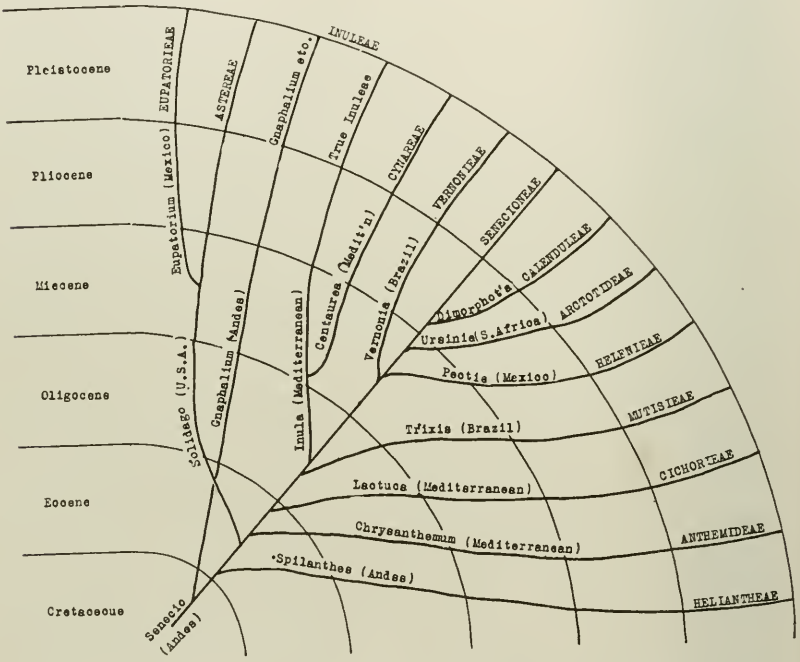

Fig. 1.—Probable evolution of the Compositae (abrikged from James Small).

about the sources of the Amazon, ascended the Andes shortly after their elevation during the cretaceous period. In the higher altitudes the plant became dwarfed, the flowers and pedicels smaller. Orthogenesis crowded the flowers closer, the anther tube became erect, only a few ovules were developed; in short there arose a form essentially like the alpine *Senecio Jacobaea*. So close is the affinity that the author must doubt the dictum of De Vries that "great lines of evolution of whole families and even of genera . . . lie outside the limits of experimental observation."—Alfred Gundersen.